



Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

ENTERED

MAY 24 2004



Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
New Mexico Environment Department
2905 E. Rodeo Park Drive, Bldg. 1
Santa Fe, NM 87505

Subject: Transmittal of Approved RFETS WSPF Number RF124.02, TRM Leaded
Drybox Gloves (S5000)

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Rocky
Flats Environmental Technology Site (RFETS) Waste Stream Profile Form (WSPF)
RF124.02

Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP
Hazardous Waste Facility Permit, No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or
(505) 706-0066.

Sincerely,

Kerry W. Watson
CBFO Assistant Manager
Office of National TRU Program

Enclosure

cc: w/o enclosure
J. Kielling, NMED
C. Walker, TechLaw
M. Strum, WTS *ED
R. Chavez, WRES *ED
L. Greene, WRES
S. Calvert, CTAC *ED
WIPP Operating Record
CBFO M&RC

*ED denotes Electronic Distribution



Waste Stream Profile Number: RF124.02Generator site name: RFETSTechnical contact: Eric D'AmicoGenerator site EPA ID: CO7890010526Phone number: (303) 966-5362Date of audit report approval by NMED: March 9, 2000 as amended February 6, 2001; May 24, 2001; June 5, 2001; April 5, 2002; April 8, 2002; August 20, 2002; August 29, 2002; December 20, 2002; April 8, 2003; September 19, 2003; and December 30, 2003Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAP-P-0050, Version 9, February 2004.Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001, February 2004. Contact-HandledTransuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 1, March 2004.Did your facility generate this waste? ☒ Yes ☐ No If no, provide the name and EPA ID of the original generator:Waste Stream Information⁽¹⁾WIPP ID: RF124.02⁽³⁾Summary Category Group: S5000⁽³⁾Waste Matrix Code Group: Combustible Waste⁽³⁾Waste Stream Name: TRM Lead Drybox Gloves (D008, D022, D028, F001, F002)⁽³⁾Description from the WTWBIR: This waste stream is a solid matrix consisting of gloves with lead lining.Defense TRU Waste: ☒ Yes ☐ NoCheck one: ☒ CH ☐ RH Number of SWBs N/A Number of Drums 61 Number of Canisters N/ABatch Data Report numbers supporting this waste stream characterization: See Table 7.List applicable EPA Hazardous Waste Codes⁽²⁾: D008, D022, D028, F001, F002Applicable TRUCON Content Codes: RF123A/223A, RF123E/223E, RF123F/223F, RF123I/223I, RF123N/223NAcceptable Knowledge Information⁽¹⁾Required Program Information

- Map of site: Reference List, No. 4
- Facility mission description: Reference List, No. 4
- Description of operations that generate waste: Reference List, Nos. 1, 3, 4, 7
- Waste identification/categorization schemes: Reference List, Nos. 9, 10
- Types and quantities of waste generated: Reference List, Nos. 1, 3, 4, 7
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 3, 7
- Waste certification procedures: Reference List, No. 6

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 3, 7
- Waste stream volume and time period of generation: Reference List, Nos. 5, 7
- Waste generating process description for each building: Reference List, Nos. 1, 3, 7
- Process flow diagrams: Reference List, Nos. 1, 3
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 3, 4, 7
- Which Defense Activity generated the waste: (Check one) Reference List, No. 4
 - ☒ Weapons activities including defense inertial confinement fusion
 - ☐ Naval Reactors development
 - ☐ Verification and control technology
 - ☐ Defense research and development
 - ☐ Defense nuclear waste and material by products management
 - ☐ Defense nuclear materials production
 - ☐ Defense nuclear waste and materials security and safeguards and security investigations

Supplemental Documentation:

- Process design documents: Note 4
- Standard operating procedures: Note 4
- Safety Analysis Reports: Note 4
- Waste packaging logs: Note 4
- Test plans/research project reports: Note 4
- Site data bases: Note 4
- Information from site personnel: Note 4
- Standard industry documents: Note 4
- Previous analytical data: Note 4
- Material safety data sheets: Note 4
- Sampling and analysis data from comparable/surrogate Waste: Note 4
- Laboratory notebooks: Note 4

Sampling and Analysis Information⁽¹⁾

[For the following, when applicable, enter procedure title(s), number(s) and date(s)]

- ☒ Radiography: Reference List Nos. 14, 15, 20
- ☒ Visual Examination: 12, 13, 17, 18, 19
- ☒ Headspace Gas Analysis
 - VOCs: Reference List, No. 8, 16, 21
 - Flammable: Reference List, No. 8, 16, 21
 - Other gases (specify): N/A
- ☐ Homogeneous Solids/Soils/Gravel Sample Analysis (Tables 1, 3, 4, and 5 are not applicable and not included)
 - Total metals: N/A
 - PCBs: N/A
 - VOCs: N/A
 - Nonhalogenated VOCs: N/A
 - Semi-VOCs: N/A
 - Other (specify): N/A

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

[Signature]
Signature of Site Project Manager

G. A. O'Leary, Manager TRU Programs
Printed Name and Title

5/5/04
Date

C. L. Ferrera
Signature of Site QA Officer

C. L. Ferrera, TWCP Site QAO
Printed Name and Title

5/5/04
Date

- NOTE**
- (1) Use back of sheet or continuation sheets, if required.
 - (2) EPA Hazardous Waste Codes were determined using acceptable knowledge and confirmed using headspace gas sampling and analysis (see attached Characterization Information Summary documenting this determination).
 - (3) This waste stream is similar to waste streams that are identified in the WTWBIR (RF-MR-0339 and RF-MT0339) and differs only in the assignment of EPA hazardous waste numbers and that the waste stream description is not completely correct (i.e., the waste stream does not include free liquids in the final waste form). The WIPP ID assigned corresponds to the Waste Stream Profile Number. The Summary Category Group, Waste Matrix Code Group, and Waste Stream Name are based on acceptable knowledge (see attached AK Summary). The BIR ID reported in WWIS is assigned using standard BIR conventions for those containers that do not have a valid BIR ID in the WTWBIR.
 - (4) See the References section in the Acceptable Knowledge Summary (attached) for additional backup documentation associated with this waste stream.

REFERENCE LIST

1. Backlog Waste Reassessment Baseline Book, Waste Form 42, Leaded Glovebox Gloves, October 2003.
2. Interoffice Memorandum from Vivian S. Sendelweck to Eric D'Amico, Tentatively Identified Compound in TRM Leaded Rubber Gloves (D008, D022, D028, F001, F002) Waste, Headspace Sampling Lot 1, VSS-015-2004, April 2004.
3. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, October 2003, and archived versions.
4. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 13, May 2004.
5. Waste and Environmental Management System (WEMS) database.
6. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Version 6, February 2004.
7. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.22, Revision 0, April 2004.
8. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
9. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
10. Waste characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
11. Interoffice Memorandum from Douglas K. Sullivan to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report for Waste Stream Profile RF124.02 Lot 1, DKS-007-04, April 2004.
12. Visual Examination for Confirmation of RTR, 4-H80-776-ASRF-007, Revision 5, June 2001.
13. TRU/TRM Waste Visual Verification (V²) and Data Review, PRO-1031-WIPP-1112, Version 3, March 2004.
14. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Revision 5, October 2001.
15. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-119-NDT-00569, Revision 6, January 2002.
16. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002.
17. Visual Examination for Confirmation of RTR, PRO-1471-VE-771, Revision 0, November 2001.
18. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Version 5, February 2004.
19. RTR Visual Examination Confirmation, Building 371, PRO-1608-VECRTR-371, Revision 0, October 2002.
20. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Version 2, November 2003.
21. Headspace Gas Sampling and Analysis Using An On-Line Integrated System, PRO-1676-HGAS-S&A, Version 2, January 2004.

Form A

Reconciliation with Data Quality Objectives

I certify by signature (below) that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF # RF124.02

Item	Check Box ^a	Reconciliation Parameter
1	✓	Waste Matrix Code as reported in WEMS.
2	✓	Waste Material Parameter Weights for individual containers as reported in WEMS.
3	✓	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	✓	Container mass and activities of each radionuclide of concern as reported in WEMS.
5	✓	Each waste container of waste contains TRU radioactive waste.
6	✓	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and the number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot.
7	N/A	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for VOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
8	N/A	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
9	N/A	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for metals in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
10	N/A	Sufficient number of samples was taken to meet statistical sampling requirements.
11	✓	Only validated data were used in the above calculations, as documented through the site data review and validation forms and process.
12	✓	Waste containers were selected randomly for sampling, as documented in site procedures.
13	✓	The potential flammability of TRU waste headspace gases.
14	✓	Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL ₉₀ for the misclassification rate is less than 14 percent.
15	✓	Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C.
16	✓	All TICs were appropriately identified and reported in accordance with the requirements of the WIPP WAP prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
17	✓	The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WIPP WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
18	✓	The RTLs (i.e., PRQLs) for all analyses were met prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
19	✓	Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling.
20	✓	Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit.

^a Check (✓) indicates that data or acceptable knowledge are sufficient to determine the waste parameters and that the waste parameters have been reported in the listed document or database. N/A indicates parameter does not apply to waste stream. NO indicates data are insufficient.

R. J. Ballinger for
Signature of Site Project Manager

G. A. O'Leary
Printed Name

5/5/04
Date

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF124.02

Sampling and Analysis Method (check one):

☒ 100% Sampling☐ Reduced Sampling

2A

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Mean ^d	UCL ₉₀ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (ppmV)	EPA Code ^f
1,1-Dichloroethane	13	Log	Fail ^h	0.053	0.375	2.303	10	
1,2-Dichloroethane	3	Log	Fail ^h	-1.064	-0.789	2.303	10	
1,1-Dichloroethylene	13	Log	Fail ^h	-0.225	0.132	2.303	10	
cis-1,2-Dichloroethylene	0			0.455			10	
trans-1,2-Dichloroethylene	0			0.875			10	
1,1,2,2-Tetrachloroethane	0			0.438			10	
1,1,1-Trichloroethane	25	Log	Fail ^h	2.988	3.659	2.303	10	F001, F002
1,1,2-Trichloro-1,2,2-Trifluoroethane	8	Log	Fail ^h	-0.487	-0.095	2.303	10	
1,2,4-Trimethylbenzene	0			0.451			NA	
1,3,5-Trimethylbenzene	0			0.45			NA	
Acetone	29	Sq. Rt.	Pass	7.026	7.683	10	100	
Benzene	14	Log	Fail ^h	-0.063	0.159	2.303	10	
Bromoform	0			0.429			10	
Butanol	0			6.374			100	
Carbon disulfide	5	Log	Fail ^h	-0.603	-0.406	2.303	10	
Carbon tetrachloride	28	Log	Pass	3.956	4.67	2.303	10	F001
Chlorobenzene	0			0.411			10	
Chloroform	26	Log	Pass	1.811	2.243	2.303	10	
Cyclohexane	1	Log	Fail ^h	-1.157	-0.904	2.303	NA	
Ethyl benzene	0			0.391			10	
Ethyl ether	0			0.668			10	
Methanol	1	Log	Fail ^h	1.988	2.083	4.605	100	
Methyl ethyl ketone	12	Log	Fail ^h	1.507	1.705	4.605	100	
Methyl isobutyl ketone	0			4.115			100	
Methylene chloride	26	Log	Pass	1.003	1.297	2.303	10	
o-Xylene	2	None	Fail ^h	0.467	0.571	N/A	10	
m,p-Xylene	2	Log	Fail ^h	-0.837	-0.578	2.303	10	
Tetrachloroethylene	3	Log	Fail ^h	-1.147	-0.893	2.303	10	
Toluene	30	Log	Pass	1.586	1.749	4.277	72.02 ^g	
Trichloroethylene	1	Log	Fail ^h	-0.834	-0.686	2.303	10	

NOTES:

^a A total of 31 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited. Headspace gas sampling and analysis was conducted on 11 of the 31 containers prior to the addition of trans-1,2-dichloroethylene to the target analyte list.

^b Identifies the number of samples in which the associated analyte was detected.

^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

NOTES: (continued)

- ^a Statistics calculated based on using $\frac{1}{2}$ the MDL for less-than-detectable observations with data transformation as identified (Reference 11). When transformation was applied, the Mean and UCL₉₀ values presented are the transformed values (Reference 11). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values for analyte and calculation of standard deviation and UCL₉₀ values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL₉₀ are subject to potentially large relative error.
- ^b RTLs for headspace gas analysis results correspond to the analyte PRQL for analytes that are WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC).
- ^c No entry indicates that the applicable UCL₉₀ value did not exceed the associated RTL.
- ^d Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 4).
- ^e Data set (with or without transformation) did not pass the test for normality. The data set that most approximated a normal distribution was used for computation of statistics.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

WSPF # RF124.02

2B

TENTATIVELY IDENTIFIED COMPOUND (TIC) CHEMICAL ABSTRACTS SERVICE (CAS) Number	Maximum Observed Estimated Concentration (ppmv)	# of Samples Containing TIC
2-Pentanone, CAS # 107-87-9	2.2	1
2-Methylpropene, CAS # 115-11-7	4.4	1
Carbonyl sulfide, CAS # 463-58-1	11	1
Methyl chloride, CAS # 74-87-3 ^a	40	9 ^a
Methyl acetate, CAS # 79-20-9	3.7	2
Methylcyclopentane, CAS # 96-37-7	3.2	1

- ^a TIC was determined not to be a listed hazardous waste based on comparison of the TIC identification to acceptable knowledge. TIC was added to the Headspace VOC target analyte list for the subject waste stream (see Reference No. 2).

Did the data verify the acceptable knowledge? ☒ Yes ☐ No

Data as reported in Data Summary Report – Table 2 confirm acceptable knowledge in that no toxicity characteristic volatile organic or F-listed solvent EPA codes, other than those assigned by acceptable knowledge, are applicable.

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

**Data Summary Report—Table 6: Exclusion of
Prohibited Items**

WSPF # RF124.02

The absence of prohibited items is documented through acceptable knowledge. Radiography or visual examination is performed on each container in this waste stream to verify the absence of the following prohibited items:

- Liquids
- Non-radionuclide pyrophoric materials
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes
- Explosives or compressed gases
- PCBs in concentrations greater than or equal to 50 ppm
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous wastes

Newly generated waste is characterized by visual verification (VV) at the time of waste packaging using the visual examination (VE) technique unless the use of radiography in lieu of, or in combination with, visual verification is justified by any of the following criteria:

- Visual verification was conducted during packaging, but was unacceptable.
- Visual verification requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel.
- Situations where waste packaging is conducted at numerous locations generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

Each container of waste is certified and shipped only after radiography and/or VE either:

1. Did not identify any prohibited items in the waste container, or
2. All prohibited items found in a waste container by radiography or VE are identified and corrected (i.e., eliminated or removed) through the site non-conformance reporting system.

Data Summary Report—Table 7: Correlation
of Container Identification to Batch Data Reports

WSPF # RF124.02

Package No.	Radioassay Data Package	Headspace Sample Batch No.	Headspace VOC Data Package	Radiography Data Package
D56723	CPN-97-005	01W0171	HVOC-DP-00500	6T2047
D61415	569IP1-DP-051402	02W0062	HGAS-DP-00226	6T2038
D61696	440SH1-DP-121901	01W0148	HVOC-DP-00477	6T2010
D62174	CPN-97-001	01W0172	HVOC-DP-00501	6T2047
D62450	CPN-97-008	01W0173	HVOC-DP-00502	6T2021
D62581	CPN-97-001	01W0125	HVOC-DP-00462	6T1799
D63912	CPN-01-034	01W0162	HVOC-DP-00492	6T1865
D63916	569IP1-DP-011602	01W0145	HVOC-DP-00473	6T2002
D65074	CPN-01-039	01W0184	HVOC-DP-00518	6T1866
D66371	CPN-01-014	01W0117	HVOC-DP-00441	6T1785
D66654	569IP1-DP-020802	01W0221	HVOC-DP-00550	5T0286
D67068	CPN-01-042	01W0184	HVOC-DP-00511	6T1866
D67246	CPN-01-035	01W0162	HVOC-DP-00491	6T2019
D68371	569IP1-DP-040502	04W0103	HGAS-DP-00820	6T1863
D68732	CPN-97-004	01W0219	HVOC-DP-00547	6T2054
D68753	569IP1-DP-041102A	02W0047	HGAS-DP-00364	5T0296
D69991	CPN-01-034	01W0161	HVOC-DP-00490	6T1865
D70811	CPN-97-003	01W0156	HVOC-DP-00484	6T2004
D71207	569IP1-DP-041902A	04W0154	HGAS-DP-00870	5T0298
D71901	569IP1-DP-041802	04W0187	HGAS-DP-00903	5T0297
D72096	569IP1-DP-040502	04W0112	HGAS-DP-00829	6T1863
D72097	CPN-01-040	01W0184	HVOC-DP-00518	6T1866
D72446	CPN-01-039	01W0184	HVOC-DP-00511	6T1866
D72851	569IP1-DP-040502	04W0140	HGAS-DP-00856	6T1863
D73057	CPN-01-036	02W0068	HGAS-DP-00347	6T1863
D73058	CPN-97-006	01W0152	HVOC-DP-00481	6T2004
D73063	CPN-97-007	01W0123	HVOC-DP-00452	6T1799
D73121	569IP1-DP-010903	04W0149	HGAS-DP-00865	6R-049
D73175	CPN-97-002	02W0059	HGAS-DP-00319	6T2069
D73718	569IP1-DP-102501	01W0192	HVOC-DP-00519	6R-041
DC4771	569IP1-DP-030602	04W0019	HGAS-DP-00740	5T0291

NOTES:

Radiography was performed on all of the containers identified here. All of the containers were candidates for visual examination for confirmation of radiography; however, none were selected.

Acceptable Knowledge Summary

WSPF # RF124.02

**RMRS-WIPP-98-100, Acceptable Knowledge TRU/TRM Waste Stream Summaries, Section 7.22: TRM
Leaded Drybox Gloves (D008, D022, D028, F001, F002) (attached).**



Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

**ACCEPTABLE KNOWLEDGE TRU/TRM
WASTE STREAM SUMMARIES**

RMRS-WIPP-98-100

Section 7.22

TRM Leaded Drybox Gloves (D008, D022, D028, F001, F002)

Profile No. RF124.02

Revision 2

Reviewed for Classification/UCNI
By: Unclassified Not UCNI
Reference Exemption Number CEX-032-00
Date: May 11, 2004

Approval signatures in Site Document Control history file

7.22 TRM Leaded Drybox Gloves (D008, D022, D028, F001, F002)

Profile No. RF124.02

Acceptable Knowledge Waste Stream Summary

Waste Stream Name: TRM Leaded Drybox Gloves (D008, D022, D028, F001, F002)

Generation Buildings: Buildings 440, 707, 771, 776, and 777^(6,7,8)

Waste Stream Volume (Retrievably Stored): 59 55-gallon drums^(1,7)

Generation Dates (Retrievably Stored): May 1988 – May 2001^(1,7)

Waste Stream Volume (Newly Generated): 2 55-gallon drums^(1,7)

Generation Dates (Newly Generated): February 2002 – August 2002^(1,7)

Waste Stream Volume (Projected): None^(1,2)

Generation Dates (Projected): None^(1,2)

TRUCON Content Codes⁽¹⁾: RF 123A/223A, RF 123E/223E, RF 123F/223F, RF 123I/223I,
RF 123N/223N

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Section 7.22.5)

7.22.1 WIPP Transuranic Waste Baseline Inventory Report Information⁽²⁾

WIPP Identification Numbers: RF124.02

Summary Category Group: S5000 Waste Matrix Code Group: Combustible Waste

Waste Matrix Code: S5311

Waste Stream Name: TRM Leaded Drybox Gloves (D008, D022, D028, F001, F002)

Description from the WTWBIR: This waste stream is a solid matrix consisting of gloves with lead lining.

Note: The waste is similar to waste that is identified in the WTWBIR: RF-MR0339 and RF-MT0339 but differs only in the assignment of EPA hazardous waste numbers and the waste description in WTWBIR is not completely correct (i.e., this waste stream does not include liquids in the final waste form). Therefore, the WIPP ID corresponds to the Waste Stream Profile Number and the Summary Category Group, Waste Matrix Code Group, Waste Matrix Code and Waste Stream Name are based on acceptable knowledge as provided in Section 7.22.2.

7.22.2 Waste Stream Description

TRM leaded drybox glove wastes were generated from a variety of operations in support of weapons fabrication and manufacturing including plutonium production and recovery operations, maintenance operations, repackaging operations, and D&D of the facilities and equipment utilized in these operations. This waste is generated from similar activities, and is similar in material, physical form, and hazardous constituents, and is therefore considered a single waste stream. Table 7.22-1 presents the waste matrix code and waste material parameters for this waste stream.⁽⁵⁾

Table 7.22-1, TRM Leaded Drybox Glove Waste Description

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
339	Leaded Drybox Gloves, Not Acid Contaminated	S5311, Leaded Gloves/Aprons	Other Metal/Alloys Rubber	63% 37%

Note: The above Waste Material Parameter addresses the IDC only and does not include internal packaging (e.g. inner bags), container packaging (e.g. fiberboard liner), secondary waste, etc.

IDC 339, Leaded Drybox Gloves Not Acid Contaminated: Leaded drybox gloves are leaded rubber gloves manufactured with a lead oxide layer between two or more layers of neoprene-Hypalon for shielding against penetrating radiation.⁽⁶⁾

7.22.3 Areas of Operation

TRM leaded drybox gloves assigned EPA hazardous waste numbers D008, D022, D028, F001 and F002 are generated by the following defense operations:^(5,6,7,8,9,10,11)

- Plutonium Production
- Plutonium Recovery
- Maintenance
- Repackaging
- Decontamination and Decommissioning (D&D)

7.22.4 Generation Processes

IDC 339 TRM leaded drybox glove wastes were generated primarily from production, recovery and maintenance operations (primarily Buildings 707, 771 and 776/777), as well as from D&D of the facilities and equipment that were utilized in these operations. Due to degradation from contact with process materials during normal process operations and age, the leaded gloves were replaced according to schedule or as necessary.^(6,9,10,11,12)

Building 707 was the main weapons-components production facility where plutonium metal was cast into ingots in the foundry. The ingots were machined into parts on various pieces of equipment and assembled into weapons components with welders.

Plutonium residues such as metal turnings were formed into briquettes for use in the foundry. Nondestructive testing, inspection, and nuclear material inventory and packaging were conducted in support of production processes. Many of the same weapons components production operations were also performed in Building 776/777. The Radiography Process in Building 777 cleaned and x-rayed finished plutonium parts as a quality control check. Building 771 was the primary plutonium recovery facility. Plutonium residues were dissolved in acid to create plutonium nitrate solution that may have been further processed by anion exchange. The nitrate feed was batched for evaporation followed by precipitation to produce plutonium peroxide and calcined to an oxide. The plutonium oxide was converted to plutonium tetrafluoride and reduced to plutonium metal.^(6,9,10,12)

Maintenance on the related equipment such as ventilation filtration systems, ventilation and process off-gas scrubbing systems, compressors, pumps, process piping, valves, radiation instrumentation, and other process equipment was routinely conducted. Maintenance activities also included drybox glove replacement.^(6,9,10,11)

Current waste generation activities also include container repackaging operations in Building 440. Containers with non-conformances or insufficient acceptable knowledge (AK) are unpacked in a containment tent, examined and compared to the existing container paperwork, and repackaged to current WIPP waste acceptance criteria.⁽⁸⁾

A more detailed description of each of these processes and process flow diagrams can be found in the WSRIC Building Books referenced in Section 7.22.8

7.22.5 RCRA Characterization

This waste stream is characterized as a mixed waste. As described in Section 7.22.2, this waste is generated from similar activities, and is similar in material, physical form, and hazardous constituents, and is therefore considered a single waste stream. The waste stream as a whole is assigned EPA hazardous waste numbers D008, D022, D028, F001 and F002. For on-site storage, the individual containers of mixed waste in this waste stream are assigned a subset of these EPA hazardous waste numbers because the BWR Baseline Book Subpopulations and WSRIC Process Numbers used by the Site do not define waste streams in accordance with the WAP. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with leaded gloves are listed in the WEMS AK Waste Stream Summary for Profile Number RF124.02.⁽⁷⁾

Leaded gloves are manufactured with a lead oxide layer between two or more layers of neoprene-Hypalon. Historical analytical data for leaded gloves indicates lead leaches from the gloves above the Regulatory Threshold Limit (RTL) of 5 mg/L. Therefore, the gloves exhibit the characteristic of toxicity for lead and are assigned EPA hazardous waste code D008.^(6,7,8,9,10,11)

Visual examination of waste contents at the time of packaging and/or Real-Time Radiography (RTR) is used to verify that the waste stream does not contain liquid waste, explosives, non- radionuclide pyrophoric materials, compressed gasses, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003). In addition, this waste stream only includes leaded gloves assigned to IDC 339; therefore, it only contains leaded gloves used in acid processes that have been washed to remove the acid contamination.⁽⁶⁾

F001 and F002 hazardous waste codes are assigned to this waste stream for the following reasons:

1. This waste stream includes containers of leaded gloves generated under WSRIC process 776_777-11 (the carbon tetrachloride system in Buildings 777) and WSRIC process 707-27 (the carbon tetrachloride and 1,1,1-trichloroethane [TCA] collection systems in Building 707). These systems collected waste carbon tetrachloride, 1,1,1-trichloroethane, and freon which were used for their solvent properties in production operations in these buildings.^(6, 11)
2. This waste stream includes containers generated in Buildings 707 and 777 prior to April 1990 that were originally assigned to a different waste stream by AK, but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. Based on the archived WSRIC information, carbon tetrachloride and 1,1,1-trichloroethane were used in Buildings 707 and 777 as cleaning agents in various operations. These operations were conducted in gloveboxes that were fitted with leaded gloves. Originally, these leaded gloves were not characterized as listed waste because at the time the leaded gloves came in contact with the solvents, the gloves and solvents were not waste, but were being utilized for their intended purpose. It was also believed that these gloves would not have become contaminated with solvent because they would not retain volatile solvents in the same manner as paper or cloth wipes. Therefore, the leaded gloves in this population were not considered to be F-listed hazardous waste under the mixture rule as provided in 40 CFR 261.3. Subsequently, based on a review of the headspace analytical data, F-listed solvents (carbon tetrachloride and 1,1,1-trichloroethane) were consistently detected in IDC 339 drums that have accumulation start dates or fill dates prior to April 1990. It is also known that production operations were curtailed in late 1989. From this information, it can be inferred that leaded gloves generated in any area of Buildings 707 and 777 prior to April 1990 may be contaminated with oils and solvents; therefore EPA hazardous waste number F001 and F002 were added to these containers. One drum of leaded gloves generated in Building 777 but later repacked in Building 776 in December 1990 is also included in this population. Carbon tetrachloride and 1,1,1-trichloroethane were used for both their solvent and degreasing properties in Buildings 707 and 776/777.^(6,7,9,10)

3. This waste stream includes other containers not addressed in 1 and 2 above that were originally assigned to a different waste stream by AK, but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. F001 and/or F002 listed solvents were detected in concentrations above the Program Required Quantitation Limit (PRQL) in the individual container headspace of these segregated containers.^(6,7)

This waste stream also includes containers that were originally assigned to a different waste stream by AK, but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. Chloroform and/or 1,2-dichloroethane were detected in concentrations above the PRQL in the individual container headspace of these segregated containers. Consequently EPA hazardous waste numbers D022 and/or D028 are also assigned to this waste stream.^(6,7)

Although F003 listed solvents such as acetone, methanol, and xylene were used in production operations, these solvents are listed solely for ignitability. Because the leaded glove wastes are not ignitable (i.e., are not assigned D001), EPA hazardous waste number F003 is not assigned to this waste stream.^(6,13)

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Leaded gloves may have been contaminated with beryllium and therefore, trace quantities (less than one weight percent) of beryllium may be present in this waste stream. Any beryllium present is as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste.

No discarded chemical products, off-specification species, chemical residues, and spill residues thereof (40 CFR 261.33) were included in this waste stream and no hazardous waste from specific sources (40 CFR 261.32) was generated at the site. Therefore no K, U, or P listings have been applied to this waste stream.^(6,7,8,9,10,11)

The leaded gloves waste streams generated at RFETS and sent to the INEEL for storage have the same IDC but are considered different waste streams because of the EPA hazardous waste numbers assigned. The INEEL waste stream (Local ID Numbers ID-RFO-339T) was generated and shipped to INEEL prior to the full implementation of RCRA and therefore, EPA hazardous waste numbers were assigned to each IDC as a whole.⁽⁴⁾

Headspace gas sampling and analysis of the first lot of containers assigned to this waste stream by AK detected 19 VOCs. Statistics were calculated based on using one-half the method detection limit (MDL) for less-than-detectable observations with data transformation applied where appropriate. Using this "WIPP directed" method, the calculated 90% upper confidence limits (UCL₉₀) for the mean concentration of two analytes (carbon tetrachloride and 1,1,1-trichloroethane) were found to exceed their

regulatory threshold limit (RTL). Chloroform (D022) and 1,2-dichloroethane (D028) were detected at less significant concentrations. No new EPA waste codes are required and no changes to the AK assigned EPA hazardous waste codes were made based on this data (i.e., all EPA hazardous waste codes assigned by AK are retained for the subject waste stream).⁽¹³⁾

7.22.6 Transportation

The payload containers in this waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable volatile organic compounds (VOCs) including acetone, benzene, cyclohexane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, methanol, methyl ethyl ketone, toluene, xylenes, and carbon disulfide were identified in this waste stream based on the descriptions in the *BWR Baseline Book*, *WSRIC Building Books*, and/or headspace gas sampling and analysis. Therefore, flammable VOCs in the payload container headspace have the potential to exceed 500 ppm. All payload containers, including those that exceed 500-ppm flammable VOCs in the headspace gas, are evaluated for compliance with applicable TRAMPAC requirements using the eTRAMPAC system prior to shipment.^(6,13)

7.22.7 Radionuclides

Table 7.22-4 summarizes the radionuclides potentially present in TRM leaded drybox gloves waste.⁽⁵⁾

Table 7.22-4, TRM Leaded Drybox Glove Waste Radionuclides

IDC	Description	Radionuclides
0339	Leaded Drybox Gloves	WG Pu, Am-241, Am-243, DU, EU, Np-237

Key: WG Pu weapons-grade plutonium
 Am-241 americium-241
 Am-243 americium-243
 DU depleted uranium
 EU enriched uranium
 Np-237 neptunium-237

7.22.8 References

1. WASTREN 2004. Interoffice Memorandum from M. L. Johnson to Waste Records Center. Waste Stream Volume for RF124.02, MLJ-029-2004, April 15, 2004
2. WASTREN 2003. Interoffice Memorandum from Jeff Harrison to Eric D'Amico. Projected Waste Stream Volumes and Generation Dates for TRU and TRM Waste, JLH-011-2003, February 12, 2003
3. RFETS 2004. Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001.
4. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 2. DOE/CAO-95-1121.
5. RMRS 2004. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 13.
6. RFETS 2003. Backlog Waste Reassessment Baseline Book, Waste Forms 42, Leaded Glovebox Gloves.
7. Waste and Environmental Management System (WEMS) database.
8. RFETS 2004. Waste Stream and Residue Identification and Characterization, Building 440STOR, Version 7.0.
9. EG&G 1992. Waste Stream and Residue Identification and Characterization, Building 707, Version 3.2
10. EG&G 1993. Waste Stream and Residue Identification and Characterization, Building 777, Version 3.2
11. RFETS 2001. Waste Stream and Residue Identification and Characterization, Building 776/777, Version 6
12. EG&G 1992. Waste Stream and Residue Identification and Characterization, Building 771, Version 3.2
13. Interoffice Memorandum from Douglas K. Sullivan to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile Number RF124.02 Lot 1, DKS-007-04, April 6, 2004